

the wafer including the sectioned [sensing elements] composite arrangements, wherein the treating step is performed prior to the sectioning step.

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23. (Amended) The method according to claim 13, further comprising the step of:  
sectioning the [sensor element] composite arrangement from a wafer with a laser, the wafer including individual [sensing elements] composite arrangements composed of a composite of green films, wherein the sectioning step is performed simultaneously with the blunting step, and wherein the blunting step includes the step of blunting the edges of the [sensing element] composite arrangement with the laser.

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### Remarks

#### **I. INTRODUCTION**

Claims 13-24 are pending in the above-identified application. Claims 13-24 stand rejected under 35 U.S.C. § 112, ¶ 2, as being indefinite. Claims 13, 14 and 24 stand rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 5,144,249 ("Kurishita") in view of U.S. Patent No. 5,871,313 ("Nenadic"). Claims 15-23 would be allowable if rewritten to overcome the rejection under 35 U.S.C. § 112, ¶ 2. Claims 13-16 and 19-23 have been amended. Applicants respectfully request that the Examiner reconsider the above-identified application in view of the following remarks.

#### **II. REJECTION UNDER 35 U.S.C. § 112, ¶ 2, WITH RESPECT TO CLAIMS 13-24**

Claims 13-24 stand rejected under 35 U.S.C. § 112, ¶ 2, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

In particular, the Examiner maintains that claim 13 is indefinite in that the second step recites "blunting edges of the sensing element before sintering" while the first step recites "sintering to yield the sensing element". The Examiner notes that no sensing element exists before sintering so the edges of the sensing element cannot be blunted before sintering.

to claim 13.

With respect to paragraph three (3), claims 13, 14 and 24 were rejected under 35 U.S.C. § 103(a) as unpatentable over Kurishita et al., U.S. Patent No. 5,144,249, in view of Nenadic et al., U.S. Patent No. 5,871,313.

As regards Nenadic, it purportedly concerns a cutting assembly and an apparatus and method for self-aligned chamfering of a "Controlled Collapsed Chip Connector (C4) ball grid array (BGA) multilayer ceramic (MLC) package" workpiece, in which the chamfering apparatus includes a mechanism for releasably securing the workpiece for preparing to chamfer the workpiece, a cutting assembly, and a mechanism for moving the cutting assembly proximately with respect to the securing mechanism between a first position and a second position, in which the cutting assembly traverses along an edge portion of the workpiece to be chamfered. As stated, the cutting assembly includes: (i) a guide member having a guide surface; (ii) a blade member mechanically coupled with respect to the guide surface for establishing a desired cutting depth; (iii) a mechanism for applying a resilient tensioning force to the guide member, the "resilient tensioning means" applying a first tensioning force when the guide member is in a non-chamfer engaging position and applying a second tensioning force when the guide member is in a chamfer engaging position, the chamfer engaging position corresponding to a position of the guide member when the guide surface engages the portion of the workpiece to be chamfered; and (iv) a mechanism for locking the guide member to maintain the chamfer engaging position and the desired cutting depth subsequent to the guide surface no longer being in contact with the workpiece.

As further stated, the apparatus and method of the is directed to addressing the cracking problem caused by "fixture off" handling and/or processing. In particular, the Nenadic reference states that:

The smaller size of the ceramic chip carrier presents several problems. One such problem is not having an ability to chamfer both the edges 12 and the corners 14 (FIG. 1) of a ceramic substrate 10 in a reliable and repeatable manner with low loss yields. Corner and edge chamfers are required for both aesthetic reasons as well as for yield purposes. For instance, a sharp ceramic edge is very brittle and vulnerable to chipping and cracking. *During semiconductor chip device packaging processes, plating and bond & assembly processes typically fixture off (i.e., reference from) the substrate sides. As a result of fixturing off of the substrate sides, there are usually high yield losses associated with non-chamfered edges. The*

problem is further complicated by tighter spacings between the substrate side and the active metallurgy of the package which results in less room for the chamfer. . . .

The chamfer tools presently used to chamfer PGA product are not suitable for BGA chamfering since the chamfer size which results from use of those tools will vary with the tolerance on the X-Y size and thickness (i.e., as a result of fixed cutter positions). Furthermore, the parts to be chamfered are typically moved, flipped and rotated several times in order to achieve 8 edge chamfers and 4 corner chamfers using such known chamfer tools. Increased handling of a substrate can be a cause for major yield problems in the chamfering of much thinner packages, also.

(See Nenadic, col. 1, lines 31 to 64) (emphasis added).

As regards Kurishita, it purportedly concerns a formed oxygen sensor, in which chamfering is applied to ridges formed parallel to the lengthwise direction of the already formed oxygen sensor element which is exposed to the gas to be measured. (See Kurishita, Abstract). Accordingly, this reference discloses no more information than is discussed in the Background Information of the present application, as referred to below.

In contrast, the subject matter of claim 1 is directed to addressing the entirely different problem of excessive heat causing cracking in the sensor element, which is used in relatively high temperature automotive applications. In this regard, the present application discusses, for example, the problem and the solution as follows:

*During testing of the sintered sensing element, or during utilization thereof as intended, the individual layers of the sensing element are exposed to different temperatures. Because of these sudden temperature changes which occur with differing intensity, the sensing elements experience a temperature shock which leads to the occurrence of mechanical stresses in the surface region, in particular at the edges of the sensing element. [To] increase the temperature shock resistance of the sensing elements, . . . the edges of the sensing element [may be blunted or chamfered]. . . .*

The [exemplary] method . . . offers, in contrast, the advantage that blunting of the edges of the sensing element can be accomplished in a simple manner without the risk of impairing the sensing element. Because the edges of the sensing element are blunted prior to sintering, it is possible to blunt the edge in any desired geometry using simple, non-chip-removing

methods. In particular, a blunting of the edges can be accomplished in a form deviating from a flat surface, for example in a convex or concave form, so that mechanical stresses which occur as a consequence of a temperature shock to the blunted edges cannot result in the creation of cracks.

(See Specification, page 2, line 1 to page 3, line 3) (emphasis added).

Accordingly, it is respectfully maintained and submitted that Nenadic is plainly a non-analogous reference with respect to the presently claimed subject matter, and therefore cannot be relied on to reject the claims under 35 U.S.C. § 103(a). To rely on a reference for the purpose of rejecting the presently claimed subject matter, the reference must be in either the field of the claimed subject matter or it must be reasonably pertinent to the particular problem with which the inventors were concerned. (See M.P.E.P. § 2141.01(a)). That is not the case here.

The Nenadic reference is plainly not in the field of the claimed subject matter and is therefore directed to addressing the entirely different problem of cracking caused by “fixture off” handling in electronic substrates, and therefore simply does not concern the problem of sensor elements that may experience cracking due to high temperatures, which as discussed above is the problem that is addressed by the presently claimed subject matter. Thus, Nenadic is simply not in the field of the presently claimed subject matter. Additionally, the Nenadic reference is not reasonably pertinent to the particular problem relating to the presently claimed subject matter for the foregoing reasons. The Final Office Action does not address these facts in any way.

Accordingly, there is no motivation to combine or modify the Kurishita in view of the Nenadic reference.

Moreover, to reject a claim as being obvious under 35 U.S.C. § 103, the prior art must disclose or suggest each claim element and it must also suggest combining the elements in the manner contemplated by the claim. (See Northern Telecom, Inc. v. Datapoint Corp., 908 F.2d 931, 934 (Fed. Cir. 1990), cert. denied, 111 S. Ct. 296 (1990); In re Bond, 910 F.2d 831, 834 (Fed. Cir. 1990)). Thus, the “problem confronted by the inventor must be considered in determining whether it would have been obvious to combine the references in order to solve the problem.” (See Diversitech Corp. v. Century Steps, Inc., 850 F.2d 675, 679 (Fed. Cir. 1998)). It is respectfully submitted that the references relied on, whether taken alone or

otherwise, do not suggest in any way combining the references so as to address the problems that are met by the presently claimed subject matter for the reasons discussed above.

Accordingly, it is respectfully submitted that claim 13 and its dependent claims 14 and 24, as well as dependent claims 16 to 23, are allowable over the references relied upon for these reasons.

The cases of In re Fine, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988), and In re Jones, 21 U.S.P.Q.2d 1941 (Fed. Cir. 1992) also make plain that the Final Office Action's generalized assertions that it would have been obvious to modify the references relied upon do not properly support a §103 rejection. It is respectfully suggested that those cases make plain that the Final Office Action reflects a subjective "obvious to try" standard, and therefore does not reflect the proper evidence to support an obviousness rejection based on the references relied upon. In particular, the Court in the case of In re Fine stated that:

Instead, the Examiner relies on hindsight in reaching his obviousness determination. . . . **One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.**

In re Fine, 5 U.S.P.Q.2d at 1600 (citations omitted; emphasis added). Likewise, the Court in the case of In re Jones stated that:

Before the PTO may combine the disclosures of two or more prior art references in order to establish *prima facie* obviousness, there must be some suggestion for doing so, found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. . . .

**Conspicuously missing from this record is any evidence, other than the PTO's speculation (if it be called evidence) that one of ordinary skill . . . would have been motivated to make the modifications . . . necessary to arrive at the claimed [invention].**

In re Jones, 21 U.S.P.Q.2d at 1943 & 1944 (citations omitted; italics in original).

That is exactly the case here since it is respectfully submitted that the Final Office Action offers no evidence whatsoever, but only conclusory hindsight, reconstruction and speculation, which these cases have indicated does not constitute evidence that will support a proper obviousness finding. Accordingly, it is respectfully submitted that the Final Office Action's assertions in this regard are simply insufficient since the Office must provide proper

*evidence* of a motivation or suggestion -- which is not present for the reasons discussed above -- for modifying a reference in view of another reference to provide the claimed subject matter.

In short, it is respectfully submitted that there is no evidence whatsoever -- except subjective speculation -- that the references relied upon, whether taken alone, combined or modified, would provide the features discussed above of any of claims 13, 14 and 24. It is therefore respectfully submitted that the claims are allowable for these further reasons.

In summary, it is respectfully submitted that all of claims 13 to 24 are allowable for the foregoing reasons.

### CONCLUSION

In view of all of the above, it is believed that the rejections of claims 13 to 24 have been obviated, and that claims 13 to 24 are therefore allowable. It is therefore respectfully requested that the rejections be withdrawn, and that the present application issue as early as possible.

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